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April 14, 2023

VIA ELECTRONIC FILING
The Honorable Jocelyn G. Boyd
Chief Clerk/Administrator
The Public Service Commission of South Carolina
101 Executive Center Drive, Suite 100
Columbia SC 29210

Re: Joint Petition of Duke Energy Carolinas, LLC and Duke Energy Progress, LLC to Establish a Consolidated Informational Docket for Review and Consideration of Grid Improvement Plans
Docket No. ND-2020-28-E

DEC DEP Grid Improvement Plan Status Reports

Dear Ms. Boyd:

On August 12, 2020, by Order 2020-533 in Docket No. 2019-381-E, the Public Service Commission of South Carolina (the "Commission") approved Duke Energy Carolinas, LLC's and Duke Energy Progress, LLC's (the "Companies") joint request to establish an informational docket for review and consideration of their Grid Improvement Plan ("GIP"). As a result of that order, on August 14, 2020, the Commission opened the above-referenced NDI docket.

The Companies worked hard to deliver the continued progress made during 2022 as shown in the enclosed Status Reports and as further elaborated on in the Narrative Summary contained in this submission. The Companies are planning another stakeholder meeting to occur in June to share and discuss the 2022 results being filed today as well as provide additional program and project highlights. The Companies will continue to inform stakeholders, the Office of Regulatory Staff, and the Commission on developments in the Companies' GIPs.

Sincerely,

Camal O. Robinson

Enclosures

cc (via email with enclosures):

Counsel for Office of Regulatory Staff
Department of Consumer Affairs
Counsel for Sierra Club
Counsel for Walmart, Inc.
Counsel for SELC on behalf of SC NAACP, SCCCL & Upstate Forever
Counsel for Nucor Steel - South Carolina
Counsel for SCSBA and Cypress Creek Renewables
Counsel for SCEUC
Counsel for Vote Solar
Counsel for CMC Recycling
Hasala Dharmawardena

South Carolina Grid Improvement Plan

Duke Energy Carolinas, LLC's ("DEC") and Duke Energy Progress, LLC's ("DEP" and, together with DEC, the "Companies") Grid Improvement Plan focuses on better serving our customers, delivering reliable and resilient service to all communities that we serve and preparing the grid for a cleaner, more diversified energy future. As a reminder, on August 12, 2020, by Order 2020-533 in Docket No. 2019-381-E, the Public Service Commission of South Carolina (the "Commission") approved DEC's and DEP's joint request to establish an informational docket for review and consideration of its Grid Improvement Plan. As a result of that Order, on August 14, 2020, the Commission opened Docket No. ND-2020-28-E. The Companies have filed annual status reports, corresponding virtual forum presentation materials, and other Grid Improvement Plan documents in the above-referenced docket. These reports and documents have shown how the Companies performed in terms of program actuals compared to their targets.

Improvements achieved under the Grid Improvement Plan help to transform the grid and provide a new level of operation while providing benefits now and in the years to come. Since inception, the Grid Improvement Plan has made significant progress improving the reliability, resiliency and optimization of the South Carolina grid. For example, as described in more detail herein, the Self-Optimizing Grid program helped avoid approximately 255,000 extended customer outages in South Carolina, saving customers more than 790,000 hours of total lost outage time from inception through the end of 2022. The Grid Improvement Plan is also paving the way for better management of local distributed energy resources by expanding line capacity and adding smart and remote switching capabilities to allow for two-way power flow. For example, the 44-kV System Upgrade subprogram both protects the 44-kV system from extreme weather, but also enables more distributed energy resources interconnections by creating additional capacity on the system to transport generation from large-scale solar sites. Further, the Grid Improvement Plan has enabled the Companies to invest more in cyber and physical security to mitigate safety and security risks for the benefit of our customers.

Through the continuation of the Grid Improvement Plan, the Companies maintain focus on improving the grid to avoid outages and restore power faster than ever. We're also strengthening the electric grid to make it more resistant to outages from severe weather, and making the grid more secure, to protect against the growing threat of cyber and physical attacks. And, we are transforming the grid to enable cleaner energy options and a lower-carbon future. Distributed energy resources ("DER") are important to our customers, and we believe growing these resources is an essential step towards building a cleaner energy future for our state. The grid improvements we are making help support the sustainable growth of new technologies like battery storage. They also give customers more options and control to save energy and money.

Specifically, the South Carolina Grid Improvement Plan investment capital expenditures from January 1, 2022 through December 31, 2022, are approximately $189.8 million in DEC and approximately $55.3 million in DEP.[1] The amount spent per Grid Improvement Plan program is included in the Annual Status Reports within this filing and summarized in Table 1. These actual capital expenditures are less than the planned expenditures for 2022 by approximately two (2) percent. Many programs had notable key accomplishments during 2022 as outlined further in this summary. The Grid Improvement Plan programs continue to deliver significant customer benefits and those benefits will continue to increase as the Grid Improvement Plan is further deployed.

Table 1: SC Grid Improvement Plan Programs – 2022 Planned and Actual Capital Expenditures (DEC and DEP Combined)

Grid Improvement Plan Programs ($ in millions)	Planned 2022	Actuals 2022
Self-Optimizing Grid	$64.3	$74.6
Equipment Retrofit	6.8	5.0
Integrated Volt/VAR Control	38.1	30.8
Distributed System Demand Response	0.04	0.00
Transmission Hardening & Resiliency	28.3	20.9
Transformer Bank Replacement	10.4	8.7
Transmission System Intelligence	7.7	7.2
Oil Breaker Replacement	17.8	16.5
Targeted Undergrounding	19.3	26.0
Distribution Hardening & Resiliency	5.5	5.2
Enterprise Communications	27.0	24.3
Distribution Automation	12.9	18.6
Enterprise Applications	1.0	1.0
Integrated System Operations Planning	0.7	0.6
DER Dispatch Tool	1.1	1.1
Power Electronics for Volt/Var	0.2	0.1
Physical Security - Transmission	4.3	4.1
Physical and Cyber Security - Distribution	0.5	0.5
Total	$250.1	$245.1

[1] In Order No. 2023-138 in Docket Nos. 2022-254-E and 2022-281-E, the PSCSC approved recovery of DEP's deferred Grid Improvement Plan investments from inception through August 2022. Further, the PSCSC approved the continuation of DEP's Grid Improvement Plan deferral from September 2022 to the Company's next rate case.

Key Accomplishments

Self-Optimizing Grid ("SOG") – This program redesigns key portions of the distribution grid into a smart-thinking, self-healing grid with the ability to automatically reroute power around trouble areas to quickly restore power to the maximum number of customers and to enable better management of local distributed energy resources.

- Inception-to-date through December 31, 2022, the Self-Optimizing Grid program helped avoid approximately 255,000 extended customer outages in South Carolina, saving customers more than 790,000 hours (47.5 million minutes) of total outage time. It is also paving the way for better management of local distributed energy resources by expanding line capacity and adding smart and remote switching capabilities to allow for two-way power flow.
- To date, the Companies have installed self-healing technology serving 12.0% of customers in DEC and 50.9% of customers in DEP in South Carolina.
- During 2022, the automated self-healing technologies utilized in the Self-Optimizing Grid activated at 97% and 91% success rates for DEC and DEP, respectively.
- During 2022, more SOG work on DEP circuits was completed than originally planned due to prioritization of SOG projects and labor availability. The DEC SOG program was executed as anticipated.

Equipment Retrofit – This is a forward-looking, outage prevention program that focuses on identifying vulnerabilities that can cause outages to large numbers of customers.

- The Distribution Transformer Retrofit subprogram minimizes the number of customers impacted by a fault or failure on the power line. These upgrades not only help to reduce customers impacted by a disruption, but also help to lower the risk of an outage occurring at the transformer itself. More than 4,700 units were installed during 2022.
- The Arrester Station Retrofit subprogram work improves the customer experience by reducing the possibility and effect of arrester station failures caused by animal interference and lightning, which often cause an entire feeder to experience a power outage. Installation work will begin in 2023.
- The Riser Pole Retrofit subprogram addresses reliability issues by upgrading the underground terminations and other conductive components on the pole to be consistent with modern design standards. Installation work will begin in 2023.

Integrated Volt/VAR Control ("IVVC") – This DEC program enables grid operators to operate the distribution grid in a Conservation Voltage Reduction ("CVR") mode that supports voltage reduction and energy conservation on a year-round basis, for approximately 90% of the hours in the year. Customers are already benefiting from increased operational efficiency and improved VAR ("Volt-Amps-Reactive") management using the controls that have been installed.

- Inception-to-date through December 31, 2022, the program has installed 525 (or 60%) of the capacitors, 342 (or 83%) of the regulator controls and associated load balancing efforts resulting in 258 circuits commissioned in preparation for voltage reduction. These devices provide visibility to operators about the status of voltage regulators helping them better optimize the system while additional analysis is taking place for the remaining overhead construction activities on the targeted circuits. This equipment is already providing increased operational awareness to distribution grid conditions.
- Substation IVVC construction and commissioning is ongoing with detailed engineering complete on 100 (or 100%) of the stations to date, with physical construction taking place on 90 of these stations and commissioning complete on 69 stations. Better monitoring and control capabilities are being added to station capacitor and voltage regulating equipment.
- Inception-to-date through December 31, 2022, 23 substations and 119 distribution feeder lines served by those substations have reached the IVVC construction complete status. This means the physical work inside the station fence and on the distribution lines is finished. These substations are in Anderson, Greenville, Lancaster, Spartanburg and York counties and are now available for the testing and enablement phase of IVVC.
- During 2022, IVVC devices at the Knollwood substation went through a detailed testing protocol and enablement. This was an important milestone for the program as it represents the first DEC substation to successfully turn on IVVC functionality.
- The project is on track to start delivering capacity and energy savings on approximately 10% of targeted substations in 2023, 20% in 2024, and 100% in 2025.

Distribution System Demand Response ("DSDR") – This conversion project will transition DEP from a predominant DSDR peak shaving operational strategy to a CVR operational strategy. CVR is a Distribution Management System ("DMS") function that supports voltage reduction on a year-round basis as opposed to an as-needed peak shaving tool, for approximately 90% of the hours in the year. CVR functionality targets an estimated 2% voltage reduction. This capability benefits our customers through lower energy costs and more effective integration of distributed energy resources. In addition, enhancements will provide flexibility for both capacity and energy saving capabilities while preserving options for efficient management of the grid.

- 2022 activities included determining DMS settings needed to implement CVR functionality.
- The project will begin scaled implementation of CVR on DEP substations in 2024 and complete implementation in 2025.

Transmission Hardening & Resiliency – This work seeks to strengthen the grid against extreme weather and other physical threats, helping not only minimize impacts to customers, but enhance their electric service experience.

- The 44-kV System Upgrade subprogram both protects the 44-kV system from extreme weather, but also paves the way for more DER interconnections by creating additional capacity on the system to transport generation from large-scale solar sites. A key example of this South Carolina work completed in 2022 is upgrades in Greenwood County, which helps improve reliability for nearly 7,500 customers.
- The Cathodic Protection subprogram extends the life of the existing towers that provide the generating power to be transmitted to nearby substations. Approximately 650 units were installed in 2022.
- The Animal Mitigation subprogram includes installation of fencing at 4 substations in 2022, helping prevent animal-caused outages at South Carolina substations in Greenville, Spartanburg, Chesterfield, and Sumter Counties.
- The Buzzard Shield subprogram hardens the 500-kV transmission system by protecting v-string insulators from buzzard secretion, which can accumulate to the point of causing flashover outages resulting in significant voltage sags on the grid. The Richmond-Newport 500kV line, located in York County, is an example of South Carolina work completed in 2022

Transformer Bank Replacement – This work helps to predict potential transformer bank failures and conduct proactive bank replacement. These improvements help significantly reduce the impacts and costs of an unplanned replacement and help avoid outages from a catastrophic equipment failure. During 2022, 11 transformer banks were proactively replaced under this program, helping reduce the risk of a disruptive, unplanned extended outage for more than 26,000 customers.

Transmission System Intelligence – This program consists of several types of upgrades designed to enable better protection and monitoring of the transmission grid. The data collected from digital relays and condition-based monitors helps better assess and optimize transmission asset health. These projects improve reliability for customers by helping avoid unplanned outages and reducing the duration and impacts associated with transmission system interruptions. Installations of intelligent communication equipment have been completed at 6 South Carolina substations (55 Carolinas system-wide) during 2022.

Oil Breaker Replacement – The purpose of the Oil Breaker Replacement program is to replace these legacy assets with breaker technology capable of two-way communications and remote operations to isolate a fault to the smallest section of the system to minimize customer outages. Work was accelerated to prioritize reliability and environmental improvements. Approximately 25 distribution and transmission oil breakers were replaced during 2022.

Targeted Undergrounding ("TUG") – During 2022, more than 10 miles of outage-prone overhead conductor have been converted to underground to improve reliability for customers experiencing a high number of historical outages, while helping restore service more quickly and cost effectively to all customers in SC. Since the program's inception, projects have been completed serving approximately 3,300 customers in 18 of the 30 South Carolina counties served by DEC and DEP including Anderson, Chesterfield, Clarendon, Darlington, Dillon, Florence, Greenville, Greenwood, Kershaw, Lancaster, Lee, Marlboro, Newberry, Oconee, Spartanburg, Sumter, Williamsburg and York counties.

Distribution Hardening & Resiliency – This program is designed to improve reliability in parts of the grid where specific reliability concerns exist. Concerns may be related to long duration outages, susceptible overhead lateral infrastructure, storm damage, and public interference.
Long Duration Interruptions projects improve reliability for parts of the grid with high potential for, or history of, extended outages as well as for high-impact customers like airports and hospitals. In 2022, notable projects have been completed in South Carolina towns served by Duke Energy Carolinas and Duke Energy Progress including Bishopville, Kingstree, Camp Croft and Brushy Creek.

Enterprise Communications – The Enterprise Communications program upgrades communication technologies, helps to secure Duke Energy's communication network against physical and cyber threats, and provides new tools and capabilities for grid operators and field personnel. This program includes improvement and expansion of the entire communications network, from high-speed, high-capacity backbone fiber optic and microwave network improvements to upgrades to the wireless connections at the edge of the grid. These upgrades help build the secure communications required for the increasing number of smart components, sensors and remotely activated devices on the transmission and distribution systems. During 2022, 50.5 miles of optical ground wire and underground fiber were installed in South Carolina. There was also an upgrade and replacement of one tower site in Blacksburg, South Carolina to support growth in private wireless technology like Microwave, High-Capacity Edge Wireless and Land Mobile Radio. In addition, the Network Asset System (NAS) application was completed.

Distribution Automation – This program comprises several complementary efforts that work in concert to support dynamic and growing distribution system loads in a more sustainable way while minimizing power quality issues that often accompany a large-scale transition to DER.

- The Fuse Replacement subprogram is modernizing the grid with automatic operating devices capable of resetting themselves, resulting in fewer customer sustained and momentary service interruptions that occur at the tap or branch lines. During 2022, more than 1,300 units were installed.

- The Hydraulic-to-Electronic Recloser ("H2E") project replaces end-of-service oil-filled devices with modern, remotely operated reclosing devices that support continuous system health monitoring. During 2022, the H2E project completed prior-year carryover units in addition to the 2022 planned work.
- Underground System Automation modernizes the protection, control and monitoring of underground power systems that serve critical high-density areas, such as urban business districts and airports. The Downtown Greenville, Spartanburg and Anderson Underground System Automation projects have included installing automatic operating switchgears, duct bank infrastructure, primary circuit extensions, and fiber networks for switchgear relays for SCADA and self-healing capabilities. Such equipment upgrades offer further value through remote operations to support planned switching operations and rapid power restoration in the event of a sustained outage.

Enterprise Applications – This effort focuses on delivering advanced system planning and operational tools to improve the Companies' data analytic capabilities and help better identify future needed grid improvements. Completed projects in 2022 include:

- Transmission Health & Risk Management Tool - This application is a system intelligence platform that works with asset data, new research, and analytics to create actionable insights into asset health and system risk. These insights support asset lifecycle extension, failure avoidance, sparing strategies, project prioritization and more.
- Customer Mapping Engine – This tool is part of a new way to improve and sustain data required to support the modern grid and renewable ready circuits. Downstream benefits include improving the information provided to customers during communications, improving the grid to avoid outage and restore power faster as well as enabling the grid to facilitate cleaner energy options.
- Grid Data Quality Project – This is an advanced data analytics framework to address grid data quality improvement across grid and DER assets. This project will permanently improve, standardize and sustain the quality of grid and DER data by identifying gaps using advanced data analytics, recommending data corrections, and supporting updates to various systems of record.

Integrated System and Operations Planning ("ISOP") – ISOP is a comprehensive planning process using new tools to integrate generation, load, transmission, and distribution together to more effectively, efficiently, and economically deal with an increasingly diverse set of energy factors. During 2022, development plans for both the Grid Hosting Capacity and Protective Equipment Analysis projects were approved. These projects further the ISOP objectives of incorporating new resources that can serve multiple functions from the distribution grid all the way up to generation.

The Grid Hosting Capacity project gives the Company and outside stakeholders better guidance for where DERs can be located, and the Protective Equipment Analysis project will result in more accurate models of the distribution system when considering how resources will function on it.

DER Dispatch Tool – As DER penetration increases, the Companies need system-wide visibility and control to model, forecast, safely dispatch, and settle an optimized portfolio of both utility and third party owned DER. This project will help meet the need to match energy demand with supply, especially in emergency conditions. During 2022, phase one of the project included implementing a tool for control and dispatch of transmission DER via the Companies' Energy Control Center. Implementation of 50MW curtailment blocks will be implemented in June 2023.

Power Electronics for Volt/VAR – This is a limited-scale deployment focused on validation of capabilities and benefits of integrating advanced solid-state technologies like power electronics (i.e., static VAR compensators and other solid-state voltage support equipment) onto the distribution system to manage power quality issues associated with increasing DER penetration. During 2022, the project team completed engineering analyses and design at two (2) South Carolina sites - Greenville and Florence, updated the 12kV and 25kV design standards for medium voltage statcom devices, and conducted quality assurance assessments at the devices' manufacturing facility.

Physical Security - Transmission – This program focuses on hardening substations against physical attacks. This program addresses security issues at substations that are critical to the reliability of the electric transmission system. It focuses on identification of threats, preventive measures, detection and event monitoring, mitigation, and recovery. During 2022, both DEC and DEP programs have been executed as anticipated including completing 8 projects.

Physical and Cyber Security - Distribution – This program is focused on securing and improving risk mitigation on thousands of SCADA-controlled line devices (e.g. capacitors, regulators, recloser) through a combination of software and line device control upgrades. Feasibility studies for bulk device management in the Secure Access Data Management subprogram are currently underway.

The Companies worked hard to complete South Carolina Grid Improvement Plan work in 2022 serving our customers with a more reliable and resilient grid, while preparing for increased levels of distributed energy resources. We will continue to work through material availability and challenges impacting the pace of affected projects and programs. The Companies remain committed to ensuring the benefits and costs associated with the Grid Improvement Plan programs continue to be in alignment with expectations.

South Carolina Grid Improvement Plan Report
Duke Energy Carolinas
Capital Expenditures 2022

	Program	Plan Target	Plan Actuals	Variance	Program Notes
1	Self-Optimizing Grid	$ 53,194,384	$ 52,661,220	$ (533,163)	
	Self-Optimizing Grid	$ 48,924,240	$ 48,842,632	$ (81,608)	Program is executing as anticipated.
	Advanced DMS	$ 4,270,144	$ 3,818,589	$ (451,555)	The 2022 work plan for ADMS was further refined after initial estimates, resulting in actual spend lower than initial estimates, but the program is executing as anticipated.
2	Distribution Hardening & Resiliency	$ 3,801,508	$ 4,029,534	$ 228,026	
	Long Duration Outages	$ 3,801,508	$ 4,029,534	$ 228,026	Program is executing as anticipated.
3	Integrated Volt Var Control	$ 38,053,241	$ 30,772,705	$ (7,280,536)	Program was behind schedule in 2022 due to availability of Transmission Service and Apparatus Technicians, but anticipates recovering schedule in 2023.
4	Transmission Hardening & Resiliency	$ 25,070,388	$ 17,899,179	$ (7,171,209)	Program is slightly behind schedule due to material/equipment/outage delays, planned work is anticipated to be completed for less than target amount.
5	Transmission Bank Replacement	$ 7,751,047	$ 6,784,084	$ (966,963)	Program is slightly behind schedule due to material delays, but anticipates recovering schedule in 2023.
6	Transmission System Intelligence	$ 7,042,208	$ 6,658,264	$ (383,944)	Program is executing as anticipated.
7	Oil Breaker Replacement	$ 13,984,687	$ 13,702,665	$ (282,022)	Program is executing as anticipated.
8	Targeted Undergrounding	$ 12,836,149	$ 18,758,656	$ 5,922,507	Program is ahead of schedule, but actual costs are expected to be higher due to some areas having geological complications.
9	Enterprise Communications	$ 20,085,348	$ 18,007,253	$ (2,078,095)	
	Mission Critical Transport	$ 10,410,730	$ 8,767,085	$ (1,643,645)	Company was able to reduce the scope of the project while providing the same benefits.
	GridWAN	$ 857,638	$ 322,462	$ (535,176)	Program is behind schedule due to materials availability.
	Mission Critical Voice	$ 4,017,361	$ 4,657,704	$ 640,343	Program is ahead of schedule due to early materials procurement.
	Next Generation Cellular	$ 370,633	$ 204,035	$ (166,598)	Program is behind schedule due to materials availability, but anticipates recovering schedule in 2023.
	Network Asset Systems	$ 218,630	$ 69,614	$ (149,016)	Program is executing at less than anticipated cost.
	Vehicle Area Network	$ 1,138,319	$ 290,630	$ (847,689)	Program is behind schedule due to longer than anticipated planning and design phases.
	Towers, Shelters, Power Supplies	$ 3,072,037	$ 3,695,722	$ 623,685	Program is ahead of schedule due to early materials procurement.
10	Distribution Automation	$ 13,518,842	$ 15,014,523	$ 1,495,681	
	Hydraulic to Electric Recloser	$ 1,941,148	$ 1,871,575	$ (69,573)	Program is executing as anticipated.
	Fuse Replacement w/ Reclosers	$ 7,287,694	$ 7,396,912	$ 109,218	Program is executing as anticipated.
	Underground System Automation	$ 4,290,000	$ 5,746,036	$ 1,456,036	Further surveying revealed the need for additional work necessary to support reliability.
11	Enterprise Applications	$ 746,623	$ 820,866	$ 74,243	
	Health Risk Management	$ 220,226	$ 228,567	$ 8,341	Project completed as anticipated.
	Other Initiatives	$ 526,397	$ 592,299	$ 65,902	Program is ahead of schedule due to early materials procurement.
12	Integrated System Operations Planning	$ 552,772	$ 496,320	$ (56,452)	Program is executing as anticipated.
13	Distributed Energy Resources Dispatch Tool	$ 837,667	$ 848,980	$ 11,314	Program is executing as anticipated.
14	Power Electronics for Volt/Var	$ 97,670	$ 92,570	$ (5,100)	Program is executing as anticipated.
15	Physical and Cyber Security	$ 3,556,821	$ 3,278,024	$ (278,797)	
	Secure Access Device Management	$ 372,234	$ 388,415	$ 16,180	Program is executing as anticipated.
	Transmission Physical Security	$ 3,184,587	$ 2,889,609	$ (294,978)	Program is executing as anticipated.
Distribution Total		$ 144,096,437	$ 141,891,043	$ (2,205,395)	
Transmission Total		$ 57,032,917	$ 47,933,802	$ (9,099,115)	
Total Grid Improvement Plan		**$ 201,129,354**	**$ 189,824,844**	**$ (11,304,510)**	

South Carolina Grid Improvement Plan Report
Duke Energy Progress
Capital Expenditures 2022

	Program	Plan Target	Plan Actuals	Variance	Program Notes
1	Self-Optimizing Grid	$ 11,087,537	$ 21,946,162	$ 10,858,625	
	Self-Optimizing Grid	$ 10,389,000	$ 21,501,725	$ 11,112,725	Program is ahead of schedule due to prioritization of SOG projects and labor availability to realize customer benefits sooner than originally planned.
	Advanced DMS	$ 698,537	$ 444,437	$ (254,100)	The 2022 work plan for ADMS was further refined after initial estimates, resulting in actual spend lower than initial estimates, but the program is executing as anticipated.
2	Distribution Hardening & Resiliency	$ 1,697,126	$ 1,200,872	$ (496,254)	
	Long Duration Outages	$ 1,697,126	$ 1,200,872	$ (496,254)	Program completed scope for less than anticipated costs.
3	Equipment Retrofit	$ 6,763,403	$ 4,974,353	$ (1,789,051)	
	Arrestors	$ -	$ 7,107	$ 7,107	Installation work is expected to begin in 2023.
	Riser Poles	$ -	$ 15,834	$ 15,834	Installation work is expected to begin in 2023.
	Transformers	$ 6,763,403	$ 4,951,411	$ (1,811,992)	Program is behind in schedule due to material availability and prioritizing projects in-flight.
4	Distributed System Demand Response	$ 41,607	$ 61	$ (41,546)	Program is executing behind schedule due to longer than anticipated planning and design phases but is on track to complete implementation by 2025 as planned.
5	Transmission Hardening & Resiliency	$ 3,213,816	$ 2,984,068	$ (229,748)	Program is executing as anticipated.
6	Transmission Bank Replacement	$ 2,610,318	$ 1,926,071	$ (684,247)	Program is executing behind schedule due to longer than anticipated planning and design phases.
7	Transmission System Intelligence	$ 663,336	$ 497,563	$ (165,773)	Program is executing as anticipated.
8	Oil Breaker Replacement	$ 3,837,162	$ 2,807,011	$ (1,030,151)	Program is behind schedule due to material delays in 2022. Anticipate recovery in 2023.
9	Targeted Undergrounding	$ 6,469,212	$ 7,227,378	$ 758,166	Program is executing as anticipated.
10	Enterprise Communications	$ 6,935,576	$ 6,282,496	$ (653,080)	
	Mission Critical Transport	$ 2,967,051	$ 3,638,965	$ 671,914	Program is executing ahead of schedule on South Carolina fiber route.
	GridWAN	$ 294,968	$ 120,069	$ (174,899)	Company was able to reduce the scope of the project while providing the same benefits.
	Mission Critical Voice	$ 1,772,458	$ 1,435,637	$ (336,821)	Company was able to reduce the scope of the project while providing the same benefits.
	Next Generation Cellular	$ 170,987	$ 46,757	$ (124,230)	Company was able to reduce the scope of the project while providing the same benefits.
	Network Asset Systems	$ 58,822	$ 28,636	$ (30,186)	Company was able to reduce the scope of the project while providing the same benefits.
	Vehicle Area Network	$ 320,681	$ 67,376	$ (253,305)	Program is executing behind schedule due to longer than anticipated planning and design phases.
	Towers, Shelters, Power Supplies	$ 1,350,609	$ 945,057	$ (405,552)	Program is delayed due to materials availability.
11	Distribution Automation	$ 3,714,936	$ 3,598,660	$ (116,276)	
	Hydraulic to Electric Recloser	$ 151,310	$ 509,193	$ 357,884	Program executed carry-over scope from 2021 in addition to planned 2022 scope.
	Fuse Replacement w/ Reclosers	$ 3,538,626	$ 3,089,467	$ (449,159)	Program is slightly behind schedule, and anticipates recovery in 2023.
	System Intelligence & Monitoring	$ 25,000	$ -	$ (25,000)	Program is behind schedule due to dependency on completion of related pre-scale project which has been delayed due to prioritzing other in-flight projects.
12	Enterprise Applications	$ 197,430	$ 202,955	$ 5,525	
	Health Risk Management	$ 56,787	$ 59,963	$ 3,176	Project completed as anticipated.
	Other Initiatives	$ 140,643	$ 142,991	$ 2,349	Program is executing as anticipated.
13	Integrated System Operations Planning	$ 147,511	$ 119,612	$ (27,899)	Program is executing as anticipated.
14	Distributed Energy Resources Dispatch Tool	$ 234,461	$ 204,656	$ (29,805)	Program is executing as anticipated.
15	Power Electronics for Volt/Var	$ 143,315	$ 5,972	$ (137,343)	Program was behind its 2022 schedule due to materials availability. The Company is expecting to receive materials in 2023.
16	Physical and Cyber Security	$ 1,214,862	$ 1,299,741	$ 84,879	
	Secure Access Device Management	$ 98,775	$ 92,475	$ (6,299)	Program is executing as anticipated.
	Transmission Physical Security	$ 1,116,087	$ 1,207,265	$ 91,178	Program is executing as anticipated.
Distribution Total		$ 37,530,888	$ 45,855,653	$ 8,324,765	
Transmission Total		$ 11,440,719	$ 9,421,977	$ (2,018,742)	
Total Grid Improvement Plan		**$ 48,971,607**	**$ 55,277,630**	**$ 6,306,023**	